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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte GANG LUO, MICHAEL W. WATZKE,
CURT J. ELLMANN, and JEFFREY F. NAUGHTON

Appeal 2009-010514
Application 10/767,681
Technology Center 2100

Before JOSEPH L. DIXON, HOWARD B. BLANKENSHIP, and
JAY P. LUCAS, *Administrative Patent Judges*.

BLANKENSHIP, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

This is an appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 1-4, 9-15, 18, and 20-26, which are all the claims remaining in the application. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm-in-part.

Invention

A table (also referred to as a relation) is made up of multiple rows (also referred to as tuples). Each row (or tuple) includes multiple columns (or attributes). Spec. ¶ [0001].

Appellants' invention relates to a database system that stores a join view associated with plural base relations. Modification operations to modify at least two of the base relations of the join view are re-ordered to avoid concurrent execution of modification operations of more than one of the base relations. Abstract.

Representative Claims

1. A method performed by software embodied in a computer-readable storage medium and executed by a computer in a database system that stores a join view associated with plural base relations, the method comprising:

receiving modification operations that modify at least two of the base relations of the join view, wherein the at least two base relations comprise a first base relation and a second base relation;

performing partitioning of the received modification operations by submitting at least some of the modification operations operating on the first base relation to a first session,

and submitting at least another of the modification operations that operate on the second base relation to a second session;

grouping the at least some of the modification operations in the first session operating on the first base relation into a first transaction,

wherein the at least another modification operation in the second session is part of a second transaction; and

schedule the transactions to avoid execution of modification operations of more than one of the at least two base relations at one time in the database system.

22. A first system comprising:

a controller having one or more processors to:

receive modification operations to modify plural base relations of a join view, the modification operations comprising modification operations to modify a first base relation of the join view, and modification operations to modify a second base relation of the join view; and

re-order the received modification operations to avoid concurrent execution of modification operations of more than one of the plural base relations of the join view,

the re-ordering to cause modification operations on the first base relation of the join view to be scheduled for execution, and to cause modification operations on the second base relation to be queued for execution after completion of the modification operations on the first base relation,

wherein certain of the modification operations on the first base relation comprise modification operations

of a set of one or more tuples of the first base relation,
and wherein the controller is adapted to:
group the modification operations on the set of one
or more tuples of the first base relation into a transaction;
and

submit the transaction to a database system
separate from the first system for execution.

Prior Art

Roffe	U.S. 5,442,785	Aug. 15, 1995
Anaya	U.S. 5,940,828	Aug. 17, 1999
Papierniak	U.S. 6,151,601	Nov. 21, 2000
Ganesh (Ganesh '828)	U.S. 6,353,828 B1	Mar. 5, 2002
Goedken	U.S. 2002/0133494 A1	Sep. 19, 2002
Desai	U.S. 6,567,816 B1	May 20, 2003
Ngai	U.S. 6,574,717 B1	Jun. 3, 2003
Cochrane	U.S. 6,581,205 B1	Jun. 17, 2003
Garth	U.S. 6,678,701 B1	Jan. 13, 2004
Ganesh (Ganesh '943)	U.S. 6,714,943 B1	Mar. 30, 2004

Examiner's Rejections

Claims 1-4, 12-15, 20, and 22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ganesh '828 and Ganesh '943.

Claims 9 and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ganesh '828, Ganesh '943, and Anaya.

Claim 11 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Ganesh '828, Ganesh '943, Anaya, and Roffe.

Claim 11 also stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Ganesh '828, Ganesh '943, Anaya, and Goedken.

Claim 18 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Ganesh '828, Ganesh '943, and Cochrane.

Claim 21 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Ganesh '828, Ganesh '943, and Ngai.

Claim 23 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Ganesh '828, Ganesh '943, and Garth.

Claims 24 and 25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ganesh '828, Ganesh '943, and Desai.

Claim 26 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Ganesh '828, Ganesh '943, Desai, and Papierniak.

ANALYSIS

Claims 1-4, 9-15, and 18

In the rejection of claim 1, the Examiner finds that Ganesh '828 does not “explicitly” teach performing partitioning of the received modification operations by submitting at least some of the modification operations operating on the first base relation to a first session, and submitting at least another of the modification operations that operate on the second base relation to a second session. Ans. 5. The rejection turns to Ganesh '943 for the teaching that is missing from Ganesh '828. *Id.* at 5-6.

Appellants contend that the indicated sections of Ganesh '943 relate to a single relation (or table). According to Appellants, in Ganesh '943 “[t]here is absolutely no concept of partitioning received modification operations

according to whether such operations operate on a first base relation or a second base relation.” App. Br. 7.

In response, the Examiner refers to Figures 3, 7, and 10A of Ganesh '943, and, apparently, submits that Figure 7 shows modification operations on two different base relations (“Dept_table” and “Emp_table”). *See* Ans. 20-22.

Appellants respond, in turn, that Figure 7 makes no mention of updating the “Emp_Table” table. Reply Br. 3. According to Appellants, the Figure 7 example of Ganesh '943 refers to determining dependencies for a transaction that modifies or deletes a row from a (single) uniqueness constrained table. *Id.* at 3-4.

We agree with Appellants. Figure 7 depicts changes to a (single) database table. Ganesh '943 col. 2, ll. 58-61. The Examiner refers (Ans. 21) to text in Ganesh '943 (col. 7, ll. 1-10) that describes transactions with respect to one table (Emp_Table), and to further text (at columns 13 and 14) that describes transactions with respect to another table (Dept_Table). The disclosure pointed out by the Examiner teaches ordering of transactions within a single table (whether Emp_Table or Dept_Table).

Figure 10A of the reference depicts two separate tables, providing an example of a referential relationship between a parent table and a child table. *Id.* at ll. 66-67. The instant rejection does not appear to refer to the text of Ganesh '943 that describes Figure 10A and the dependent relationships between changes to a parent table and a child table (col. 17, l. 58 - col. 20, l. 57). Nor does the rejection appear to address how Figure 10A may relate to the teachings in the reference concerning transactions with respect to a single table. Absent findings or reasoning from the Examiner, we decline to

speculate how the teachings of ordering transactions in a single table might be applied to the multiple tables (Fig. 10A) in the reference. In any event, the rejection does not demonstrate how Ganesh '943 might be deemed to teach the partitioning of received modifications as claimed.

We therefore cannot sustain the § 103(a) rejection of claim 1 over Ganesh '828 and Ganesh '943. Because independent claim 12 recites limitations similar to those of claim 1, and the additional references applied against the dependent claims do not remedy the basic deficiency in the rejection applied against the base claims, we also cannot sustain the § 103(a) rejections of claims 2-4, 9-15, and 18.

Claims 20-26

Claim 22 is independent. The claim recites that the controller is “adapted to: group the modification operations on the set of one or more tuples of the first base relation into a transaction; and submit the transaction to a database system separate from the first system for execution.” The Examiner did not appear to address the limitations in the Final Rejection. In the Appeal Brief, Appellants submit that column 5, lines 1 through 20 of Ganesh '943 fails to teach the argued limitations.¹

The Examiner, in response, clarifies that the “adapted to” clause of claim 22 was not considered to limit the scope of the claim. Ans. 27. However, the Examiner advances alternative findings that are based on disclosures in Ganesh '943 that include text at column 7, text at column 21,

¹ Appellants also allege that “no reason existed to combine” Ganesh '828 and Ganesh '943 (App. Br. 9), but fail to provide support for the allegation by addressing the specific combination that is applied to the requirements of claim 22.

and Figure 14. *Id.* at 27-28. Appellants respond, in turn, by again addressing “column 5” of Ganesh '943 and submit that “nowhere in this passage” is there any hint of submitting a transaction, in which modification operations on a set of one or more tuples of a first base relation have been grouped, to a database system separate from the first system for execution. Reply Br. 5.

First, we note that Appellants have not responded to the Examiner’s findings at page 27 and 28 of the Answer that are based on disclosures apart from column 5 of Ganesh '943. As such, Appellants have not shown error in the rejection of claim 22; the rejection could thus be sustained on that basis alone. *See Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential) (“If an appellant fails to present arguments on a particular issue -- or, more broadly, on a particular rejection -- the Board will not, as a general matter, unilaterally review those uncontested aspects of the rejection.”).

Moreover, we agree with the Examiner that Ganesh '943 teaches grouping modification operations on the set of one or more tuples of the first base relation into a transaction as claimed. For example, text at column 7, lines 1 through 11 discloses that transaction T5 commits at time 25 having executed two statements (UPDATE and DELETE). The reference thus at least teaches grouping modification operations (UPDATE and DELETE) on one or more tuples (rows) into a transaction (T5).

We also agree with the Examiner that Ganesh '943 teaches submitting the transaction to a database system separate from the first system for execution. Figure 14 of the reference depicts a user station or host computer that includes, *inter alia*, one or more processors 1407 that constitute a

“controller” consistent with claim 22. Ganesh '943 col. 21, ll. 21-35. The reference makes clear that the database may be separate from the host computer (*id.* at col. 20, l. 58 - col. 21, l. 8; Fig. 13). Even if resident on the host computer, the database is stored in memory, separate from the controller (*id.* at col. 21, ll. 9-18). Any transactions are thus submitted to a database system separate from the first system (comprising the processors) for execution on the database system.

We are therefore not persuaded that the Examiner erred in the rejection of claim 22. We sustain the rejection. Claims 20, 21, and 23-26, which are not separately argued, fall with claim 22. *See* 37 C.F.R. § 41.37(c)(1)(vii).

DECISION

The Examiner’s rejections under 35 U.S.C. § 103(a) are affirmed with respect to claims 20-26 but reversed with respect to claims 1-4, 9-15, and 18.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 41.50(f).

AFFIRMED-IN-PART

Vsh